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Registration Decision

Coniothyrium minitans strain CON/M/91-08

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Registration Decision for *Coniothyrium minitans* strain CON/M/91-08

Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act* and Regulations, is granting full registration for the sale and use of Contans WG Biological Fungicide and Contans WG, containing the technical grade active ingredient *Coniothyrium minitans* strain CON/M/91-08, to control fungal diseases in a variety of field and greenhouse vegetables.

An evaluation of available scientific information found that, under the approved conditions of use, the product has value and does not present an unacceptable risk to human health or the environment.

These products were first proposed for registration in the consultation document[1] Proposed Registration Decision PRD2008-17, *Coniothyrium minitans strain CON/M/91-08*. This Registration Decision[2] describes this stage of the PMRA's regulatory process for *Coniothyrium minitans* strain CON/M/91-08 and summarizes the Agency's decision and the reasons for it. The PMRA received no comments on PRD2008-17. This decision is consistent with the proposed registration decision stated in PRD2008-17.

For more details on the information presented in this Registration Decision, please refer to Proposed Registration Decision PRD2008-17, *Coniothyrium minitans strain CON/M/91-08*, that contains a detailed evaluation of the information submitted in support of this registration.

What Does Health Canada Consider When Making a Registration Decision?

The key objective of the *Pest Control Products Act* is to prevent unacceptable risks to people and the environment from the use of pest control products. Health or environmental risk is considered acceptable[3] if there is reasonable certainty that no harm to human health, future generations or the environment will result from use or exposure to the product under its conditions of registration. The Act also requires that products have value[4] when used according to label directions. Conditions of registration may include special precautionary measures on the product label to further reduce risk.

To reach its decisions, the PMRA applies modern, rigorous risk-assessment methods and policies. These methods consider the unique characteristics of sensitive subpopulations in humans (e.g. children) as well as organisms in the environment (e.g. those most sensitive to environmental contaminants). These methods and policies also consider the nature of the effects observed and the uncertainties when predicting the impact of pesticides. For more information

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1. "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.
2. "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.
3. "Acceptable risks" as defined by subsection 2(2) of *Pest Control Products Act*.
4. "Value" as defined by subsection 2(1) of *Pest Control Products Act*"...the product's actual or potential contribution to pest management, taking into account its conditions or proposed conditions of registration, and includes the product's (a) efficacy; (b) effect on host organisms in connection with which it is intended to be used; and (c) health, safety and environmental benefits and social and economic impact".

on how the PMRA regulates pesticides, the assessment process and risk-reduction programs, please visit the PMRA's website at healthcanada.gc.ca/pmra.

What is *Coniothyrium minitans* strain CON/M/91-08?

Coniothyrium minitans strain CON/M/91-08 is a microbial pest control agent used to control fungal plant disease on a variety of field and greenhouse vegetables. The end-use product Contans WG is a commercial fungicide product that contains *Coniothyrium minitans* strain CON/M/91-08 as the active ingredient.

Coniothyrium minitans strain CON/M/91-08 is a fungus that parasitizes *Sclerotinia sclerotiorum*. It specifically attacks long-lived, resting structures (sclerotia) of fungal plant pathogens belonging to the genus *Sclerotinia* in the soil.

Health Considerations

Can Approved Uses of *Coniothyrium minitans* strain CON/M/91-08 Affect Human Health?

Coniothyrium minitans strain CON/M/91-08 is unlikely to affect your health when Contans WG is used according to the label directions.

People could be exposed to *Coniothyrium minitans* strain CON/M/91-08 when handling and applying the product. When assessing health risks, several key factors are considered: the microorganism's biological properties (e.g. production of toxic byproducts), reports of any adverse incidents, its potential to cause disease or toxicity as determined in toxicological studies and the level to which people may be exposed relative to exposures already encountered in nature to other isolates of this microorganism.

Toxicological studies in laboratory animals describe potential health effects from large doses to identify any potential pathogenicity, infectivity and toxicity concerns. When *Coniothyrium minitans* strain CON/M/91-08 was tested on laboratory animals, there were no signs that it caused any significant toxicity or disease.

Residues in Water and Food

Dietary risks from food and water are not of concern.

The *Food and Drugs Act* prohibits the sale of food containing a pesticide residue that exceeds the established maximum residue limit (MRL). Pesticide MRLs are established for the *Food and Drugs Act* purposes through the evaluation of scientific data under the *Pest Control Products Act*. Each MRL value determines the maximum concentration in parts per million of a pesticide allowed in or on certain foods. Food containing a pesticide residue that does not exceed the established MRL does not pose an unacceptable health risk.

Strains of *Coniothyrium minitans* are common in nature and the use of Contans WG in agricultural fields and in greenhouses to control fungal disease on vegetables is not expected to significantly increase natural environmental background levels of this microorganism. Furthermore, when *Coniothyrium minitans* strain CON/M/91-08 was administered orally to rats, no signs that it caused toxicity or disease were observed. Although certain strains of *Coniothyrium minitans* produce secondary metabolites, *Coniothyrium minitans* strain CON/M/91-08 is not known to produce any secondary metabolites and has demonstrated low toxicity in animal studies. The establishment of a MRL is not, therefore, required for *Coniothyrium minitans* strain CON/M/91-08. As well, the likelihood of residues contaminating drinking water supplies is minimal to non-existent. Consequently, dietary exposure and risks are minimal to non-existent.

Occupational Risks from Handling Contans WG

Occupational risks are not of concern when Contans WG is used according to label directions, which include protective measures.

Workers using Contans WG can come into direct contact with *Coniothyrium minitans* strain CON/M/91-08 on the skin, in the eyes, or by inhalation. For this reason, the label will specify that users exposed to Contans WG must wear gloves, a long-sleeved shirt, long pants, a National Institute of Occupational Safety and Health (NIOSH) approved respirator (with any N, P, R or HE filter) and shoes plus socks.

For bystanders, exposure is expected to be much less than that of handlers and mixer/loaders and is considered negligible. Therefore, health risks to bystanders are not of concern.

Environmental Considerations

What Happens When Contans WG Is Introduced into the Environment?

Environmental risks are not of concern.

Information on the environmental fate of *Coniothyrium minitans* strain CON/M/91-08 suggests that, as a soil microorganism, it is likely that *Coniothyrium minitans* strain CON/M/91-08 could survive in outdoor soil under suitable environmental conditions (i.e. the type of soil, moisture, acidity levels and temperature) but that over time the populations of *Coniothyrium minitans* strain CON/M/91-08 should return to naturally occurring levels.

There are no published reports of disease associated with *Coniothyrium minitans* in birds, wild mammals, fish, insects, earthworms, soil microorganisms and plants except for the intended pest and its close relatives, i.e. *Sclerotinia* species. Furthermore, studies designed to examine the effects of *Coniothyrium minitans* strain CON/M/91-08 on fish, aquatic insects and algae reported no adverse effects. Although studies on birds, wild mammals, terrestrial insects, earthworms, soil microorganisms and terrestrial plants were

not conducted, adequate information was available to determine that risks to these non-target organisms are not expected.

Value Considerations

What Is the Value of Contans WG?

Contans WG reduces *Sclerotinia* inoculum in the soil.

When applied to soil or crop residues, hyphae (threadlike structures) of *Coniothyrium minitans* penetrate and subsequently degrade sclerotia. Infected sclerotia fail to germinate or produce apothecia, thereby preventing development of Sclerotinia disease.

Measures to Minimize Risk

Registered pesticide product labels include specific instructions for use. Directions include risk-reduction measures to protect human and environmental health. These directions must be followed by law.

The key risk-reduction measures on the label of Contans WG to address the potential risks identified in this assessment are as follows.

Key Risk-Reduction Measures

Human Health

Because of concerns with users developing allergic reactions through repeated high exposure to *Coniothyrium minitans* strain CON/M/91-08, anyone handling or applying Contans WG must wear waterproof gloves, a long-sleeved shirt, long pants and shoes plus socks. In addition, mixers/loaders and applicators must wear a NIOSH approved respirator (with any N, P, R or HE filter).

Environment

As a general precaution, label statements will be added to the label requiring handlers to not contaminate irrigation or drinking water or aquatic habitats. In addition, instructions will be provided to limit runoff from treated fields and to keep effluent from greenhouses containing this product from entering lakes, streams, ponds or other water bodies.

Other Information

The relevant test data on which the decision is based (as referenced in this document) are available for public inspection, upon application, in the PMRA's Reading Room (located in Ottawa). For more information, please contact the PMRA's Pest Management Information Service.

Any person may file a notice of objection[5] regarding this registration decision within 60 days from the date of publication of this Registration Decision. For more information regarding the basis for objecting (which must be based on scientific grounds), please refer to the Health Canada website, Request a Reconsideration of Decision, or contact the PMRA's Pest Management Information Service.

[5] As per subsection 35(1) of the *Pest Control Products Act*

References

A. List of Studies/Information Submitted by Registrant

1.0 The Active Ingredient, Its Properties and Uses

PMRA Document Number 1428857
Reference 2006, Contans WG Biological Fungicide Product Profile and Proposed Pattern of Use, DACO: M1.2

2.0 Methods of Analysis

PMRA Document Number 1428824
Reference Machida,K.;Trifonov,L. S.;Ayer,W. A.;Lu,Z. -X;Laroche,A.;Hung Chang Huang;Kuo Joan Cheng;Zantige,J. L., 2001, 3(2H)-benzofuranones and chromanes from liquid cultures of the mycoparasitic fungus Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7.2,M4

PMRA Document Number 1428825
Reference Campbell,W. A., 1947, A new species of Coniothyrium parasitic on sclerotia, N/A, MRID: N/A, DACO: M10.0,M2.7

PMRA Document Number 1428836
Reference 2006, Analytical methods, N/A, MRID: N/A, DACO: M2.10,M2.10.1,M2.10.2,M2.10.3 CBI

PMRA Document Number 1428837
Reference McQuilken, M.P., Gemmell, J., Hill, R.A., 1998, Antifungal metabolites produced by the mycoparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.8,M7.0

PMRA Document Number 1428841
Reference Trutmann, P., Keane, P.J., Merriman, P.R., 1982, Biological control of Sclerotinia sclerotiorum on aerial parts of plants by the hyperparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428844
Reference Ahmed, A.H.M., Tribe, H.T., 1977, Biological Control of White Rot of Onion (Scerotium cepivorum) by Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.1

PMRA Document Number 1428847
Reference Whipps,J. M.;Gerlagh,M., 1992, Biology of Coniothyrium minitans and its potential for use in disease biocontrol., N/A, MRID: N/A, DACO: M2.7,M2.7.1,M2.7.2,M8.0

PMRA Document Number 1428849
Reference 2006, Cipac Standard Water MT18 vs. tap water at testing physical and chemical properties of Contans WG, 2006004, MRID: N/A, DACO: M2.12 CBI

PMRA Document Number 1428853
Reference 2005, Coniothyrium minitans - Contans WG; OECD Document N: List of endpoints, N/A, MRID: N/A, DACO: M12.7,M2.0,M4.0,M7.0,M8.0,M9.0

PMRA Document Number 1428854
Reference 2005, Coniothyrium minitans - Contans WG; OECD Document N: Overall Summary and Assessment, N/A, MRID: N/A, DACO: M12.7,M2.0,M4.0,M7.0,M8.0,M9.0

PMRA Document Number 1428860
Reference Huang, H.C., 1980, Control of sclerotinia wilt of sunflower by hyperparasites, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428868
Reference 2006, Density and Tap Density of the Contans WG Formulation, 2006003, MRID: N/A, DACO: M2.12 CBI

PMRA Document Number 1428869
Reference Pfeffer, H., Lueth, P., 1990, Der Einfluss einer Rotkleemonokultur auf das antiphytopathogene Potential des Bodens in bezug auf Sclerotinia trifoliorum Erikss, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428871
Reference Lueth, P., Pfeffer H., Schulz, R.R., 1992, Der Einfluss verschiedener Pilzarten und -isolate auf die Apothezienbildung von Sclerotinia sclerotiorum unter simulierten Fruehjahrsbedingungen, N/A, MRID: N/A, DACO: M2.7,M8.0

PMRA Document Number 1428872
Reference 1996, Determination of different physical chemical properties of the test substance Contans, C96PHC2, MRID: N/A, DACO: M2.12 CBI

PMRA Document Number 1428873
Reference 2001, Determination of physical properties of Contans WG (100 g/kg Coniothyrium minitans) - Dry sieve test including particle size distribution, wet sieve test, persistance foaming, wettability, dispersability, suspensability, PC-2001-001, MRID: N/A, DACO

PMRA Document Number 1428874
Reference 2000, Determination of purity of five batches of Contans WG, 20001231/01-ALMP, MRID: N/A, DACO: M2.10.1,M2.10.2,M2.8,M2.9.2 CBI

PMRA Document Number 1428875
Reference Whipps, J.M., Budge, S.P., Ebben, M.H., 1989, Effect of Coniothyrium minitans and Trichoderma harzianum on Sclerotinia disease of celery and lettuce in the glasshouse at a range of humidities, N/A, MRID: N/A, DACO: M2.10,M2.7,M8.0

PMRA Document Number 1428877
Reference McQuilken, M.P., Budge, S.P., Whipps, J.M., 1997, Effects of culture media and environmental factors on conidial germination, pycnidial production and hyphal extension of Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.10

PMRA Document Number 1428878
Reference McQuilken, M.P., Budge, S.P., Whipps, J.M., 1997, Effects of culture media and environmental factors on conidial germination, pycnidial production and hyphal extension of Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428884
Reference Gerlagh, M., Vos, I., 1991, Enrichment of soil with sclerotia to isolate antagonists of Sclerotinia sclerotiorum, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428897
Reference Giczey, G., Kerenyi, Z., Fueloep, L., Hornok, L., 2001, Expression of cmg1, an Exo-beta-1,3-Glucanase Gene from Coniothyrium minitans, Increases during Sclerotial Parasitism, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428900
Reference 2006, Flowablity of Contans WG, 2006003, MRID: N/A, DACO: M2.12 CBI

PMRA Document Number 1428902
Reference 2006, Friability and attrition characteristics of Contans WG, 2006002, MRID: N/A, DACO: M2.12 CBI

PMRA Document Number 1428903
Reference Phillips, A.J.L., 1989, Fungi associated with Sclerotia of sclerotinia sclerotiorum in South Africa and their effects on the Pathogen, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428905
Reference Budge, S.P., Whipps, J.M., 1991, Glasshouse trials of Coniothyrium minitans and Trichoderma species for the biological control of Sclerotinia sclerotiorum on celery and lettuce, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428908
Reference 2006, Identity of the microbial pest control agent; Biological properties of the micro-organism; Further information on the microbial pest control agent, N/A, MRID: N/A, DACO: M2.1,M2.11,M2.12,M2.2,M2.3,M2.4,M2.5 CBI

PMRA Document Number 1428909
Reference 2006, Identity of the microbial pest control agent; Biological properties of the micro-organism; Further information on the microbial pest control agent, N/A, MRID: N/A, DACO: M2.7,M2.7.1,M2.7.2 CBI

PMRA Document Number 1428916
Reference 1999, Influence of Temperature on Germination and Mycelium Growth of Conidia of Coniothyrium minitans strain CON/M/91-08, 20001231/01-ALMP, MRID: 44956902, DACO: M2.7.2,M7.0 CBI

PMRA Document Number 1428917
Reference Ghaffar, A., 1976, Inhibition of fungi as affected by oxalic acid production by sclerotium delphinii, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428918
Reference Whipps, J.M., Grewal, S.K., Van der Goes, P., 1991, Interactions between Coniothyrium minitans and sclerotia, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428919
Reference 2007, International Regulatory Status of the MPCA and EP, NA, MRID: NA, DACO: M1.3,M2.6

PMRA Document Number 1428920
Reference 2005, Investigation of the Behaviour in the Environment, Leaching Behaviour and Side Effects on Soil Microflora of Spore Isolate CON/M/91-08, IF05/02315-00, MRID: N/A, DACO: M2.10,M2.7.2,M8.2,M9.7 CBI

PMRA Document Number 1428921
Reference Kiehn, T.E., Polsky, B., Punithalingam, E., Edwards, F.F., Brown, A.E., Armstrong, D., 1987, Liver Infection Caused by Coniothyrium fuckelii in a Patient with Acute Myelogenous Leukemia, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428922
Reference Hayashi, M., Kim, Y-P, Hiraoka, H., Natori, M., Takamatsu, S., Kawakubo, T., Masuma, R., Komiyama, K., Omura, S., 1995, Macrosphelide, a novel inhibitor of Cell-Cell adhesion molecule I. Taxonomy, Fermentation, Isolation, and biological activities, N/A,

PMRA Document Number 1428923
Reference 2006, Metabolism and residue studies, N/A, MRID: N/A, DACO: M2.7.2,M2.9.3,M4.8,M7.0 CBI

PMRA Document Number 1428924
Reference Muthumeenakshi, S., Goldstein, A.L., Stewart, A., Whipps, J.M., 2001, Molecular studies on intraspecific diversity and phylogenetic position of Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428927
Reference Tu, J.C., 1984, Mycoparasitism by coniothyrium minitans on sclerotinia sclerotiorum and its Effect on sclerotial Germination, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428930
Reference Ebben, M.H., 1987, Observations on the role of biological control methods within integrated system, with reference to three contrasting diseases of protected crops, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428931
Reference 2006, Occupational Health Examination, N/A, MRID: N/A, DACO: M2.7.2,M4.6,M5.0 CBI

PMRA Document Number 1428933
Reference Turner, G.J., Tribe, H.T., 1976, On Coniothyrium minitans and its parasitism of Sclerotinia species, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428934
Reference Tribe, H.T., 1957, On the Parasitism of Sclerotinia Trifoliorum by Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428937
Reference 2006, Outcome of Storage Tests conducted with Contans WG, 2006001, MRID: N/A, DACO: M2.11 CBI

PMRA Document Number 1428942
Reference Siu, K., Izumi, A.K., 2004, Phaeohyphomycosis Caused by Coniothyrium, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428943
Reference Tomprefa, N.E., Whipps, J.M., McQuilken, M.P., Hill, R.A., 2004, Physiology and characterisation of antibiotic production in the mycoparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.8,M7.0

PMRA Document Number 1428947
Reference 1999, Product Chemistry of Contans WG, NA, MRID: 44868701, DACO: M2.10,M2.10.1,M2.10.2,M2.10.3,M2.11,M2.12,M2.13,M2.7,M2.7.1,M2.7.2,M2.8,M2.9,M2.9.1,M2.9.2,M2.9.3 CBI

PMRA Document Number 1428948
Reference McQuilken, M.P., Gemmell, J., Hill, R.A., Whipps, J.M., 2003, Production of macrosphelide A by the mycoparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.8,M7.0

PMRA Document Number 1428949
Reference McQuilken, M.P., Budge, S.P., Whipps, J.M., 1997, Production, survival and evaluation of liquid culture-produced inocula of Coniothyrium minitans against Sclerotinia sclerotiorum, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428953
Reference Trutmann, P., Keane, P.J., Merriman, P.R., 1980, Reduction of sclerotial inoculum of Sclerotinia sclerotiorum with Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428959
Reference Prophyta Biologischer Pflanzenschutz GmbH., 2005, Safety Data Sheet Contans WG, N/A, MRID: N/A, DACO: 0.9,M2.9

PMRA Document Number 1428960
Reference Sigma-Aldrich, 2006, Safety Data Sheet Dextrose, N/A, MRID: N/A, DACO: 0.9,M2.9 CBI

PMRA Document Number 1428961
Reference Archer, S.A., 1988, Sclerotinia sclerotiorum (Lib.) de Bary., N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428963
Reference Whipps, J.M., Budge, S.P., 1990, Screening for sclerotial mycoparasitesof sclerotinia sclerotiorum, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428967
Reference 1997, Storage Stability and Shelf Life of Contans WG, NA, MRID: NA, DACO: M2.11 CBI

PMRA Document Number 1428981
Reference 2007, Supplementary information DACO M2.7, N/A, MRID: N/A, DACO: M2.7.1,M2.7.2

PMRA Document Number 1428983
Reference Papendorf, M.C., 1976, The soil mycoflora of an Acacia karroo community in the Western Transvaal, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428987
Reference Lynch, J.M., Ebben M.H., 1986, The use of micro-organisms to control plant disease, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428988
Reference Su, S.J., Leu, L.S., 1980, Three parasitic fungi on Sclerotinia sclerotiorum (Lib.) de Bary, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428990
Reference 2005, Toxicological and Exposure Data and Information on the Microbial Pest Control Agent, N/A, MRID: N/A, DACO: M2.7.2,M4.1,M4.2.1,M4.3.1,M4.5.1,M5.0

PMRA Document Number 1428993
Reference Jones, D., 1970, Ultrastructure and Composition of the cell walls of sclerotinia sclerotiorum, N/A, MRID: N/A, DACO: M2.7

PMRA Document Number 1428996
Reference Lueth, P; Eiben, U., 1978, US Patent 5766583: Isolate of Coniothyrium minitans Campbell; Compositions and methods, N/A, MRID: N/A, DACO: M2.10,M2.7.1

PMRA Document Number 1428998
Reference Tiedemann, A.v., Hedke, K., 1994, Versuche zur Eindaemmung von Sclerotinia sclerotiorum durch Einsatz von sklerotienparasitischen Antagonisten im Gewaechshaus und Feld, N/A, MRID: N/A, DACO: M2.7,M8.0

PMRA Document Number 1429004
Reference Sandys-Winsch,C.;Whipps,J. M.;Gerlagh,M.;Kruse,M., 1993, World distribution of the sclerotial mycoparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7.2

3.0 Impact on Human and Animal Health

PMRA Document Number 1428824
Reference Machida,K.;Trifonov,L. S.;Ayer,W. A.;Lu,Z. -X;Laroche,A.;Hung Chang Huang;Kuo Joan Cheng;Zantige,J. L., 2001, 3(2H)-benzofuranones and chromanes from liquid cultures of the mycoparasitic fungus Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7.2,M4

PMRA Document Number 1428826
Reference 1994, Acute eye irritation study of CON/M/91-08 by instillation into the conjuctivalsac of rabbits, 8662/94, MRID: 44868706, DACO: M4.9

PMRA Document Number 1428827
Reference 1995, Acute inhalation toxicity study of CON/M/91-08 in Sprague-Dawley rats, 8887/94, MRID: 44868704, DACO: M4.2.3

PMRA Document Number 1428828
Reference 2006, Acute pulmonary toxicity/pathogenicity study of Contans WG by Intratracheal administration to CD rats, N/A, MRID: N/A, DACO: M4.2.3

PMRA Document Number 1428829
Reference 1994, Acute skin irritation test (patch-test) for Con/M/91-08, 8661/94, MRID: 44868707, DACO: M4.5.2

PMRA Document Number 1428830
Reference 1994, Acute toxicity study of CON/M/91-08 by dermal administration to Spraque-Dawley rats, 8660/94, MRID: 44868703, DACO: M4.4

PMRA Document Number 1428831
Reference 1995, Acute toxicity study of CON/M/91-08 by Interperitoneal administration to Sprague-Dawley rats, NA, MRID: 44868705, DACO: M4.3.3

PMRA Document Number 1428832
Reference 1994, Acute toxicity study of CON/M/91-08 by oral administration to Spraque-Dawley rats, 8659/94, MRID: 44868702, DACO: M4.2.2

PMRA Document Number 1428837
Reference McQuilken, M.P., Gemmell, J., Hill, R.A., 1998, Antifungal metabolites produced by the mycoparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.8,M7.0

PMRA Document Number 1428844
Reference Ahmed, A.H.M., Tribe, H.T., 1977, Biological Control of White Rot of Onion (Scerotium cepivorum) by Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.1

PMRA Document Number 1428853
Reference 2005, Coniothyrium minitans - Contans WG; OECD Document N: List of endpoints, N/A, MRID: N/A, DACO: M12.7,M2.0,M4.0,M7.0,M8.0,M9.0

PMRA Document Number 1428854
Reference 2005, Coniothyrium minitans - Contans WG; OECD Document N: Overall Summary and Assessment, N/A, MRID: N/A, DACO: M12.7,M2.0,M4.0,M7.0,M8.0,M9.0

PMRA Document Number 1428896
Reference 1995, Examination of CON/M/91-08 in the skin sensitization test in guinea pigs according to MAGNUSSON AND KLINGMAN, 8888/94, MRID: 44868708, DACO: M4.5.2

PMRA Document Number 1428911
Reference 2006, In vitro assessment of the clastogenic activity of Contans WG (lysate) in cultured human peripheral lymphocytes, N/A, MRID: N/A, DACO: M4.8

PMRA Document Number 1428923
Reference 2006, Metabolism and residue studies, N/A, MRID: N/A,
DACO: M2.7.2,M2.9.3,M4.8,M7.0 CBI

PMRA Document Number 1428926
Reference 2006, Mutagenicity study of Contans WG in the Salmonella typhimurium reverse mutation assay (in vitro), N/A, MRID: N/A, DACO: M4.8

PMRA Document Number 1428931
Reference 2006, Occupational Health Examination, N/A, MRID: N/A, DACO: M2.7.2,M4.6,M5.0 CBI

PMRA Document Number 1428943
Reference Tomprefa, N.E., Whipps, J.M., McQuilken, M.P., Hill, R.A., 2004, Physiology and characterisation of antibiotic production in the mycoparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.8,M7.0

PMRA Document Number 1428948
Reference McQuilken, M.P., Gemmell, J., Hill, R.A., Whipps, J.M., 2003, Production of macrosphelide A by the mycoparasite Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.7,M4.8,M7.0

PMRA Document Number 1428974
Reference 1994, Supplemental Data on Acute toxicity Studies, 8887/94, MRID: 44956901, DACO: M4.2.3 CBI

PMRA Document Number 1428975
Reference 1999, Supplemental Data on Acute Toxicity Studies, 8660/94, MRID: 44956901, DACO: M4.4 CBI

PMRA Document Number 1428976
Reference 1999, Supplemental Data on Acute Toxicity Studies for CON/M/91-08, NA, MRID: 44956901, DACO: M4.2.2 CBI

PMRA Document Number 1428977
Reference 1999, Supplemental Data on Acute Toxicity Studies for CON/M/91-08, NA, MRID: 44956901, DACO: M4.3.3 CBI

PMRA Document Number 1428978
Reference 1999, Supplemental Data on Acute toxicity Studies of CON/M/91-08, NA, MRID: 44956901, DACO: M4.9

PMRA Document Number 1428979
Reference 1999, Supplemental Data on Acute Toxicity Study of CON/M/91-08, NA, MRID: 44956901, DACO: M4.5.2 CBI

PMRA Document Number 1428980
Reference 1999, Supplemental Data on Acute toxicity Study of CON/M/91-08, NA, MRID: 44956901, DACO: M4.5.2

PMRA Document Number 1428990
Reference 2005, Toxicological and Exposure Data and Information on the Microbial Pest Control Agent, N/A, MRID: N/A, DACO: M2.7.2,M4.1,M4.2.1,M4.3.1,M4.5.1,M5.0

4.0 Impact on the Environment

PMRA Document Number 142884
Reference Whipps, J. M., Gerlagh, M., 1992, Biology of *Coniothyrium minitans* and its potential for use in disease biocontrol, DACO: M2.7, M2.7.1, M2.7.2, M8.0.

PMRA Document Number 1428853
Reference 2005, *Coniothyrium minitans* - Contans WG; OECD Document N: List of endpoints, DACO: M12.7 ,M2.0, M4.0, M7.0, M8.0, M9.0.

PMRA Document Number 1428854
Reference 2005, *Coniothyrium minitans* - Contans WG; OECD Document N: Overall Summary and Assessment, DACO: M12.7, M2.0, M4.0, M7.0, M8.0, M9.0.

PMRA Document Number 1428871
Reference Lueth, P., Pfeffer, H., Schulz, R.R., 1992, Der Einfluss verschiedener Pilzarten und -isolate auf die Apothezienbildung von *Sclerotinia sclerotiorum* unter simulierten Fruehjahrsbedingungen,, DACO: M2.7, M8.0.

PMRA Document Number 1428875
Reference Whipps, J.M., Budge, S.P., Ebben, M.H., 1989, Effect of *Coniothyrium minitans* and *Trichoderma harzianum* on *Sclerotinia* disease of celery and lettuce in the glasshouse at a range of humidities, DACO: M2.10, M2.7, M8.0.

PMRA Document Number 1428879
Reference 2005, Effects on non-target organisms, DACO: M9.0, M9.1, M9.2, M9.2.1, M9.2.2, M9.3, M9.4, M9.4.1, M9.4.2, M9.5, M9.5.1, M9.5.2, M9.6, M9.7, M9.8, M9.8.1, M9.8.2, M9.9.

PMRA Document Number 1428898
Reference 2006, Fate and behaviour in the environment, DACO: M8.0, M8.1, M8.2, M8.2.1, M8.2.2, M8.3, M8.4, M8.5.

PMRA Document Number 1428904
Reference Phillips, A.J.L., 1989, Fungi associated with sclerotia of *Sclerotinia sclerotiorum* in South Africa and their effects on the Pathogen, DACO: M8.0.

PMRA Document Number 1428906
Reference Budge, S.P., Whipps, J.M., 1991, Glasshouse trials of *Coniothyrium minitans* and *Trichoderma* species for the biological control of *Sclerotinia sclerotiorum* on celery and lettuce, DACO: M8.0.

PMRA Document Number 1428920
Reference 2005, Investigation of the behaviour in the environment, leaching behaviour and side effects on soil microflora of Spore Isolate CON/M/91-08, IF05/02315-00, DACO: M2.10, M2.7.2 ,M8.2 ,M9.7.

PMRA Document Number 1428935
Reference Tribe, H.T., 1957, On the parasitism of *Sclerotinia trifoliorum* by *Coniothyrium minitans*, DACO: M8.0.

PMRA Document Number 1428952
Reference Trutmann, P., Keane, P.J., Merriman, P.R., 1980, Reduction of sclerotial inoculum of *Sclerotina sclerotiorum* with *Coniothyrium minitans*, DACO: M8.0.

PMRA Document Number 1428956
Reference Williams, R. H., Whipps, J.M., Cooke, R.C., 1998, Role of soil mesofauna in dispersal of *Coniothyrium minitans*: mechanism of transmission, DACO: M10.1, M8.0, M9.0.

PMRA Document Number 1428962
Reference Whipps, J.M., Budge, S.P., 1990, Screening for sclerotial mycoparasites of *Sclerotinia sclerotiorum*, DACO: M8.0.

PMRA Document Number 1428965
Reference Williams, R.H., Whipps, J.M., Cooke, R.C., 1998, Splash dispersal of *C. initans* in the glasshouse, DACO: M8.0.

PMRA Document Number 1428968
Reference 1995, Study on the acute toxicity towards daphnia of Spore Isolate CON/M/91-08 according to OEDC Test Guideline 202, IF-94/06075-02, MRID: 44868711, DACO: M9.5.2.

PMRA Document Number 1428969
Reference 1995, Study on the acute toxicity towards fish of Spore Isolate CON/M/91-08 according to OECD Test Guideline 203, IF-94/06075-03, MRID: 44868712, DACO: M9.4.1.

PMRA Document Number 1428970
Reference 1995, Study on the toxicity towards algae of Spore Isolate CON/M/91-08 according to OECD Test Guideline 201, IF-94/06075-01, MRID: 44868710, DACO: M9.7.

PMRA Document Number 1428972
Reference 2006, Summary and evaluation of environmental impact, DACO: M9.0, M9.1, M9.2, M9.2.1, M9.2.2, M9.3, M9.4, M9.4.1, M9.4.2, M9.5, M9.5.1, M9.5.2, M9.6, M9.7, M9.8, M9.8.1, M9.8.2, M9.9.

PMRA Document Number 1428973
Reference 2006, Summary and evaluation of environmental impact: TGAI, DACO: M9.0, M9.1, M9.2, M9.2.1, M9.2.2, M9.3, M9.4, M9.4.1, M9.4.2, M9.5, M9.5.1, M9.5.2, M9.6, M9.7, M9.8, M9.8.1, M9.8.2, M9.9.

PMRA Document Number 1428984
Reference Papendorf, M.C., 1976, The soil mycoflora of an Acacia karroo community in the Western Transvaal, DACO: M8.0.

PMRA Document Number 1428995
Reference Schmidt, H.H., 1970, Untersuchungen ueber die Lebensdauer der Sklerotien von Sclerotinia (Lib.) de Bary im Boden unter dem Einfluss verschiedener Pflanzenarten und nach Infektion mit *Coniothyrium minitans* Campb., DACO: M2.7, M8.0.

PMRA Document Number 1428998
Reference Tiedemann, A.V., Hedke, K., 1994, Versuche zur Eindaemmung von *Sclerotinia sclerotiorum* durch Einsatz von sklerotienparasitischen Antagonisten im Gewaechshaus und Feld, DACO: M2.7, M8.0.

5.0 Value

PMRA Document Number 1428839
Reference 2006, Biological Assessment Dossier, B/A, MRID: N/A, DACO: M10.1,M10.2, M10.2.1,M10.2.2,M10.3,M10.3.1,M10.3.2,M10.3.2.1,M10.3.2.2,M10.4,M10.4.1,M10.4.2,M10.4.3,M10.4.4 CBI

PMRA Document Number 1428850
Reference 2003, Compatibility of Herbicides with Contans WG, N/A, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428855
Reference 1999, Contans - first biocontrol agent against Sclerotinia sclerotiorum in oilseed rape, wr-URO-97, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428880
Reference 2001, Efficacy of Contans, not stated, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428881
Reference 2003, Efficacy of Contans WG for the Control of Sclerotinia spp., GAB-101148-3-006-001, MRID: N/A, DACO: M10.2.2 CBI

PMRA Document Number 1428882
Reference 2003, Efficacy of Contans WG for the Control of Sclerotinia spp., GAB-101148-3-006-001, MRID: N/A, DACO: M10.2,M10.2.1,M10.2.2 CBI

PMRA Document Number 1428893
Reference 2002, Estimation of Contans WG efficacy in protection of winter oilseed rape against Sclerotinia sclerotiorum, wr-PL-01/b = Poznan-020715, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428894
Reference 2001, Estimation of Contans WG efficacy in protection of winter oilseed rape against Sclerotinia sclerotiorum, wr-PL-00, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428982
Reference 2000, The evaluation of biocide Contans WG efficacy for Sclerotinia sclerotiorum control on lettuce., let-PL-00, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428985
Reference 1999, The use of fungicides- and plant growth regulators in oilseed rape, wr-RO-99 = WRa-FW24-99, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428991
Reference 2001 Trials in Oilseed rape with Contans WG. Estimation of Contans WG efficacy in protection of winter oilseed rape against Sclerotinia sclerotiorum, wr-PL-01/a, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428992
Reference 2002, Trials in winter oilseed rape with Contans WG Estimation of Contans WG efficacy in protection of winter oilseed rape against Sclerotinia sclerotiorum, wr-PL-01/c, MRID: N/A, DACO: M10.0 CBI

PMRA Document Number 1428825
Reference Campbell,W. A., 1947, A new species of Coniothyrium parasitic on sclerotia, N/A, MRID: N/A, DACO: M10.0,M2.7

PMRA Document Number 1428843
Reference McLaren, D.L., Kozub, G.C., Rimmer, S.R., 1994, Biological Control of Sclerotinia Wilt of Sunflower with Talaromyces flavus and Coniothyrium minitans, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428846
Reference Whipps, J.M. Gerlagh, M., 1992, Biology of Coniothyrium minitans and ist potential for use in disease biocontrol, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428858
Reference McLaren,D. L.;Huang,H. C.;Rimmer,S. R., 1996, Control of Apothecial Production of Sclerotinia sclerotiorum by Coniothyrium minitans and Talaromyces flavus, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428859
Reference Huang, H.C., 1980, Control of sclerotinia wilt of sunflower by hyperparasites, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428862
Reference Pest Management Centre, 2006, Crop profile: Cabbage, N/A, MRID: N/A, DACO: M10.4.2

PMRA Document Number 1428863
Reference Pest Management Centre, 2005, Crop profile: Canola, N/A, MRID: N/A, DACO: M10.4.2

PMRA Document Number 1428864
Reference Pest Management Centre, 2005, Crop profile: Carrot, N/A, MRID: N/A, DACO: 10.4.2

PMRA Document Number 1428865
Reference Pest Management Centre, 2005, Crop profile: Dry bean, N/A, MRID: N/A, DACO: M10.4.2

PMRA Document Number 1428866
Reference Pest Management Centre, 2006, Crop profile: Soybean, N/A, MRID: N/A, DACO: M10.4.2

PMRA Document Number 1428875
Reference Whipps, J.M., Budge, S.P., Ebben, M.H., 1989, Effect of Coniothyrium minitans and Trichoderma harzianum on Sclerotinia disease of celery and lettuce in the glasshouse at a range of humidities, N/A, MRID: N/A, DACO: M2.10,M2.7,M8.0

PMRA Document Number 1428876
Reference Li,G. Q.;Huang,H. C.;Acharya,S. N.;Erickson,R. S., 2005, Effectiveness of Coniothyrium minitans and Trichoderma atroviride in suppression of sclerotinia blossom blight of alfalfa, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428877
Reference McQuilken, M.P., Budge, S.P., Whipps, J.M., 1997, Effects of culture media and environmental factors on conidial germination, pycnidial production and hyphal extension of Coniothyrium minitans, N/A, MRID: N/A, DACO: M2.10

PMRA Document Number 1428883
Reference Gerlagh,M.;Whipps,J. M.;Budge,S. P.;Goossen-van de Geijn, H.M., 1996, Efficiency of isolates of Coniothyrium minitans as mycoparasites of Sclerotinia sclerotiorum, Sclerotium cepivorum and Botrytis cinerea on tomato stem pieces, N/A, MRID: N/A, DACO: M

PMRA Document Number 1428895
Reference Matherton, M.E.; Porchas, M., 2001, Evaluation of products to manage Sclerotinia Leaf Drop in Lettuce in 2001., N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428925
Reference Huang, H.C.; Kozub, G.C., 1991, Monocropping to sunflower and decline of sclerotinia wilt, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428928
Reference Tu, J.C., 1984, Mycoparasitism by Coniothyrium minitans on Sclerotinia sclerotiorum and its Effect on Sclerotial Germination., N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428932
Reference Turner, G.J.; Tribe, H.T., 1976, On Coniothyrium minitans and its parasitism of Sclerotinia species, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428938
Reference Huang,H. C.;Erickson,R. S., 2002, Overwintering of Coniothyrium minitans, a mycoparasite of Sclerotinia sclerotiorum, on the Canadian Prairies, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428944
Reference Budge, S.P.; Whipps, J.M., 2001, Potential for integrated control of Sclerotinia sclerotiorum in glasshouse lettuce using Coniothyrium minitans and reduced fungicide applications, let-UK-00/a let-UK-00/b let-UK-00/c, MRID: N/A, DACO: M10.0

PMRA Document Number 1428986
Reference Lynch, J.M.; Ebben, M.H., 1986, The use of micro-organisms to control plant disease, let-UK-86/a let-UK-86/b let-UK-86/c, MRID: N/A, DACO: M10.0

PMRA Document Number 1428912
Reference 1994, Index of plant hosts of Sclerotinia sclerotiorum, N/A, MRID: N/A, DACO: M10.0

PMRA Document Number 1428955
Reference 2001, Research on biology and control of Sclerotinia diseases in Canada, N/A, MRID: N/A, DACO: M10.0,M10.4.2

B. Additional Information Considered

Published Information

Methods of Analysis

PMRA Document Number 1598402
Reference U.S. Department of Agriculture, Agricultural Research Service, 2008, U.S. Department of Agriculture, Agricultural Research Service, Systematic Mycology and Microbiology Laboratory - Nomenclature Fact Sheets. Kalmusia coniothyrium, http://nt.ars-grin.gov/s

PMRA Document Number 1598404
Reference Guarro, J. et al, 1999, Microsphaeropsis olivacea as an Etiological Agent of Human Skin Infection., Medical Mycology 1999, 37, 133-137., DACO: M2.7.2